SYNOPSIS OF THE Ph.D. THESIS ENTITLED

"COMPARATIVE STUDY OF PROXIMATE COMPOSITION AND NUTRITIONAL VALUES OF INDIGENOUS AND EXOTIC CARPS IN DIFFERENT SEASONS FROM GHARNI DAM DIST. LATUR (M.S.) INDIA"

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Submitted by
Mrs. PRANITA PRAKASH LANGDE
(Research Scholar)
Department of Zoology Kai.RasiakaMahavidyalaya, Deoni Dist. Latur.
Research Center: RajarshiShahuMahavidyalaya, (Autonomous) Latur-413512.

Under The Guidance of
Dr. P. R. MORE
(Assistant Professor)
Department of zoology
Kai.RasikaMahavidyalaya, Deoni, DistLatur - 413519
Research Center:RajarshiShahuMahavidyalaya, (Autonomous) Latur-413512

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Format for submission of Ph.D. Synopsis/Work Plan for faculty of Science to be submitted In front of RRC

Abstract of proposed work plan/problem:

1. Introduction

2. Review of Literature

3. Objectives of Research / Proposed Hypothesis:

4. Methodology to be adopted:

5. Proposed work Plan

6.Year-wise Plan of work and targets to be achieved

7. References

Signature
Research Scholar

Signature
Research Supervisor

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Title of Ph.D. Work

"COMPARATIVE STUDY OF PROXIMATE COMPOSITION AND NUTRITIONAL VALUES OF INDIGENOUS AND EXOTIC CARPS IN DIFFERENT SEASONS FROM GHARNI DAM DIST. LATUR (M.S.) INDIA"

INTRODUCTION:

Today, there is a growing awareness about the importance of eating nutritious foods and fish is gaining momentum as a result of its unique nutritional benefits. The chief component of fish includes protein, lipids, ash, moisture and carbohydrate. The amount or percentage of each component within fish body is termed as proximate composition.

Nutrition is the intake of food, considered in relation to the body's dietary needs (WHO2014). Nutrition and health are related to each other as good nutrition is the cornerstone of good health. Reduced immunity, higher susceptibility to disease, impaired physical and mental development, and decreased productivity can all be consequences of poor nutrition (Organization 2018). Human nutrition is concerned with the supply of key nutrients in foods that are required for human survival and wellness. Fish in this context, is a healthy food and is a major player in human nutrition, ensuring about 20% of protein intake to a third of the world's population which is more evident in developing countries (Béné et al. 2007).

The knowledge of proximate composition is essential in order to compare its values as food (Mishra, 2021).It is also necessary to have data on the composition of fish in order to make the best use of fish as food and in order to develop the technology of fish processing and fish products (Mishra, 2020d).Fish are considered as nutritionally valuable part of the human diet than any other animal food in view of their nutritional composition because of the presence of both macronutrients (proteins, lipids and ash) and micronutrients (vitamins and minerals).

Fishes has an excellent nutritive value which provides high quality protein, fats, vitamins and minerals. Fish muscle comprises of moisture, protein and fats as a macronutrients and carbohydrate, vitamins and minerals as micronutrients. Because of presence of both macro and micro-nutrients in fishes, it is better than other animal foods (Mishra, 2020a).Fish is also rich in micronutrients which tend to be more easily available than those from plant foods (Lilly *et al*.2017). Fish protein is much more important than other protein due to the amino acid composition and protein digestibility (Mustafa, *et.al.,* 2013).

In comparison to land living animals, fishes are rich source of protein (amino acids), which is the building block of tissue and have a high content of Omega-3 long chain poly unsaturated fatty acids. Early before the beginning of civilization, humans consume fish in a variety of ways by making various dishes. Fish has better availability and affordability than other animal protein.

The aim of this study is to provide knowledge of fish composition essential for its maximum utilization. The present study can give reliable information about proximate composition and nutritional values of Indigenous and Exotic carps to the consumers for the selection of fish seasonally.

REVIEW OF LITERATURE:

Principal composition of fish is 16-21% protein, 0.2-25% fat, 1.2-1.5% mineral, 0-0.5% carbohydrate and 66-81% water (Love 1970). Moisture, protein, lipids, ash and minerals are the most important macro and micronutrient components that act as sources of nutritive value of fish meat (Steffens 2006). Protein and fat are the most important nutrient present in fish and their composition help to describe the nutritional status of a particular organism (Aberoumadand Pourshafi 2010).

The amount or percentage of each within a fish's body is termed proximate composition. The study of the chemical composition of fish is important since it influences keeping quality and technological characteristics of the fish (Kumar et al. 2016).Measurement of

proximate profiles such as protein, lipids, and moisture content is often necessary to ensure that they meet the requirements of food regulations and commercial demands (Waterman 1980). They also influence postharvest processing and the shelf-life of the fish (Clement and Lovell 1994). Different nutrients present in fishes have a unique and very important function in human health.

Fish is a food with excellent nutritive value, which provides high-quality protein and a large variety of vitamins and minerals including vitamin A & D, magnesium and phosphorus (Balami*et al.* 2019).Fishery resources are an important source of both macro and micronutrients for humans. Fish provides essential nutrients especially proteins of high biological values and fats, so it is often referred to as 'rich food for poor people' and the micro and macronutrients present in the fish make it better than other animal protein sources (Sujatha*et al.* 2013). Fish species had received tremendous attention from researchers due to the excellence in their nutritional aspects. Apart from being a food source, fish also functions to prevent human beings from a variety of diseases in the world (Abraha*et al.* 2018). A portion of 140 gm of fish can provide about 50-60% of the daily protein required by an adult human (FAO2012). As compared to land-living animals, fishes are a rich source of protein and have a high content of omega-3 long-chain fatty acids. Intake of animal source foods (ASF) in young children has been associated with improved dietary quality and growth outcomes (Murphy andAllen 2003).Fish can be beneficial to be consumed whole as it shows a high protein-fat ratio as compared to the meat of goat, lambs, buffalo and chicken (Steffens 2006).

Debnath*et al.* (2014) worked on protein and mineral composition of some local fishes of Tripura, India. The selected fish species Amblypharyngodonmola, Esomusdanricus, Puntiussophore, Channafasciata, Labeobata, Catlacatla, Labeorohita and Cirrhinusmrigala were analyzed and the reports concluded that all the fish species were nutritionally competitive even in their dried state.

OBJECTIVES OF THE STUDY:

1. To estimate the moisture, crude fat, crude protein, crude ash and mineral contents (calcium, phosphorus, iron) Indigenous and Exotic Carps.
2. To compare the different nutrient levels among Indigenous and Exotic Carps.
3. Explain the biochemical composition of Indigenous and Exotic Carps.
4. Underline the nutritional importance of fish in human diet.
5. Indicate the amount of nutritionally important omega-3 fatty acids present in fish lipids.
6. To find out the nutritional quality of Indigenous and Exotic carp fish species and
7. Justify that fish is nutritionally important from the consumers' point of view.

MATERIALS AND METHODS:

Study Area:

GharniDam, is an earthfill dam on Gharni river near Sirur, Latur district in the state of Maharashtra in India.Official name of dam is Gharni dam D01231 and it is about 20 Km away from Research center, Rajarshishahu College, Latur.

Location of Gharni Dam in Maharashtra

Development of any scientific work is depends upon the application of appropriate techniques. Material and method are used in Study of Proximate Composition in Indigenous and Exotic Carps are as follows:

Materials:

Weighing balance, gloves, scissors, dissecting box, scale, aluminium foil, tissue papers, trays, drying oven, homogenizer, blender mixture, tongs, zipper bags, refrigerator, cast net, gill net etc.

Methods:

For the present investigation material and method will be used are as follows:-

Collection of fish species:

Fish species (Indigenous carp*: Catlacatla, Labeorohita*&*Cirrhinusmrigala*) and Exotic carps: *Cyprinuscarpio,Hypophthalmichthysmolitrix*&*Ctenopharyngodonidellus*)will be collected from Gharni damTalukaShirurAnanthpal Dist. Latur.

Identification of selected fish species:

From the above mentioned sites under study fish species to be collected. The fishes will be identified as per the key given by Day Volume.

Preparation of sample:

After the identification of the fish species, the individual length (cm) and weight (gm) of fishes will be recorded. Samples will be cleaned and degutted and their gutted weight will be measured. Further, they will be dried in an oven for 24 hours at 50□ and their dried weight will be recorded. Finally, the homogenization process was carried out by the use of a homogenizer and a grinder mixture respectively and the homogenized weight will be recorded. The homogenized samples which are the final minced powdered ones were then placed in zipper bags, sealed and refrigerated for a certain period before analysis.

Proximate analysis:

The proximate composition of the minced samples for their nutrient analysis was performed in Research center, Department of Zoology, RajarshiShahu College, Latur, (M.S.) India. The analysis included Proximate Analysis i.e. Crude Protein, Crude Fat,

Crude Ash, Moisture, etc. The proximate analysis will be done by methods: determination of moisture content (hot air oven method), crude protein (Micro-Kjeldahl), crude fat (ether extraction method), total ash and minerals (iron, phosphorous, and calcium) were done based on **AOAC (2000)** standard methods.

Statistical analysis

The data obtained will be analyzed using ANOVA tests to determine the variability in the estimates of protein, fat, moisture, carbohydrate, ash etc. content of replicate samples determined and recorded.

PROPOSED WORK PLAN:

First Year:

Literature Survey, Identification of selected fish species by Day Volume. Standardization of techniques and similarly pilot experiment show to be undertaken.

Second Year:

Experimentation on analysis ofproximate composition, biochemical analysis, finalization of analyzed data etc.

Third Year:

All statistical calculation and graph making, Thesis writing and submission process

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Date: 9/09/2023

Place: Deoni

Signature
Research Scholar

Signature
Research Supervisor